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that Mr. Church has separated from coal-tar naphtha a hydrocarbon isomeric with benzol, *parabenzol*, which boils at 97°·5. This substance is readily converted into a nitro-compound, and ultimately into the corresponding base. Is it the base thus formed which gives rise to the formation of aniline-red?

Or is it not more probable that commercial aniline contains another base analogous or homologous with aniline which is involved in the generation of the red?

These are questions equally interesting for theory and practice, and the solution of which will probably throw considerable light upon the still enigmatical genesis of rosaniline.

## VIII. "Contributions towards the History of the Colouring Matters derived from Coal-tar." By A. W. Hofmann, LL.D., F.R.S. Received June 9, 1863.

In a previous Note I have shown that the red colouring matter cannot be obtained from *normal* aniline by the action of the agents usually employed for the preparation of this colour on a large scale. This observation naturally induced me to seek for the constituent in the commercial aniline which gives rise to the formation of aniline-red.

I have already remarked that the commercial product which is best suited for the manufacture of the red colour, boils at a temperature appreciably higher than the boiling-point of normal aniline. The idea presented itself of submitting this substance to a fractional distillation, or else of effecting a methodical separation of the hydrocarbons which constitute the starting-point for the manufacture of the bases; but, as is well known, these processes are difficult and tedious, and there is little chance of success unless the operation be performed on a very large scale.

In the hope of accelerating the inquiry, I examined the action of mercuric and stannic chlorides upon the homologues of aniline, of which I fortunately possessed some pure specimens. The contiguous term *toluidine* was the first to fix my attention. The presence of this base in commercial aniline could not be doubted, since the benzol employed in the manufacture of this substance almost invariably boils at temperatures between 80° and 100°, or even higher. Indeed Mr. Nicholson having convinced himself that pure aniline is not available for the preparation of rosaniline, was at one time disposed to consider toluidine the true source of the so-called aniline-red.

But toluidine the purity of which was established by combustion when submitted under the most varied circumstances to the action of the agents already mentioned, does not produce a trace of colouring matter. The subject, which thus appeared to become more and more obscure, was elucidated by a happy experiment.

*A mixture of pure aniline and pure toluidine, when heated with mercuric chloride, stannic chloride, or with arsenic acid, instantaneously produced a magnificent red of most intense tinctorial power.* This experiment appears to show that the red belongs to both the phenic and toluic series.

I have not as yet pursued my researches further in the new field opened by this experiment.

In conclusion I may be allowed to state that by transforming into oxalate commercial aniline, and especially a specimen of aniline which was furnished to me by Mr. Nicholson as particularly well adapted for the preparation of the red, I have been enabled to obtain considerable quantities of toluidine in a state of perfect purity.

Having thus at my disposal the necessary material, I hope soon to acquire further experimental data for the explanation of the formation of rosaniline.

## IX. "On the Measurement of the Chemical Brightness of various portions of the Sun's Disc." By Henry Enfield Roscoe, B.A., F.R.S. Received June 12, 1863.

The author has applied the method of measurement of the chemical action of sunlight, which Professor Bunsen and he described in a memoir presented to the Royal Society in November last*, to the measurement of the chemical brightness of various portions of the solar disc; and although the observations which have as yet been made are only preliminary, yet he thinks that the results obtained are of sufficient interest to warrant his bringing them before the Society.

Secchi has shown† that the calorific radiation of the centre of

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* Abstract, Proc. Roy. Soc. vol. xii. p. 306; Memoir, Phil. Trans. 1863.

† Astron. Nachr. Nos. 806, 833.